

Amendments to the Specification:

Replace the paragraph starting at line 7 on page 2 with the following:

S.M. Alamouti (1, 2)[1, 2] proposes a method of overcoming this limitation. He provides a two-branch transmit diversity scheme in which two transmit antennas and one receive antenna provide the same diversity as can be achieved with one transmit antenna and two receive antennas. This means that the same reduction in the variation of the quality of the received signal that can be achieved with two receive antennas can instead be realized with two transmit antennas. In the case of a cellular wireless system with base stations and subscriber units, the variability on both the uplink and the downlink can be combated with only multiple antennas at the base station, rather than at the subscriber unit, where it is costly and cumbersome to have multiple antennas.

Replace the paragraph starting with "The invention ..." on page 5 with the following:

The invention will be generally described with reference to Figure 1. A symbol stream $d(t)$ to be transmitted during a frame in the communication system is fed into a space-time encoder. The space-time encoder divides the symbol stream $d(t)$ into two symbol streams, $d_1(t)$ and $d_2(t)$, each containing half the symbols. The transmission frame is also divided into two blocks. The space-time encoder provides input to two radio transmitters 13 and 14 connected to two antennas 11 and 12. In the transmitters 13 and 14, the digital signals from the space-time encoder are converted to analog signals via an analog-to-digital converter and upconverted to radio frequency. In one embodiment of the invention the space-time encoder transmits symbol stream $d_1(t)$ from antenna 11 ~~during a first block of the transmission frame~~ and transmits symbol stream $d_2(t)$ from the antenna 12 during a first block of the transmission frame. In a second block of the transmission frame, the space-time encoder transmits symbol stream $d_2(t)$ time-reversed, complex conjugated and negated from antenna 11, and symbol stream $d_1(t)$ is transmitted time-reversed and complex conjugated from antenna 12.

Appl. No. 09/833/543
Amdt. Dated January 20, 2005
In response to Office Action mailed 10/20/2004

Replace the paragraph starting at line 1 on page 15 with the following:

where we have denoted $n^*(N-t)$ with $n_2(t)$. Note that the signal in (32) is exactly the desired signal $r_2(t)$ in (28).